THE GEOGRAPHY OF THE CRAB ORCHARD PROJECT OF SOUTHERN ILLINOIS

BY

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THESIS

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URBANA, ILLINOIS

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PREFACE

The writer was fortunate in the preparation of this thesis in securing the cooperation of Messrs. R. J. Brown, L. S. Weber, F. E. Boucher, Hugh Baumgardner, and Walter W. John of the Soil Conservation Service. In addition constructive criticisms and helpful suggestions were made by Dr. J. H. Burgy, Assistant Professor of Geography, University of Illinois. The writer is also greatly indebted to Mr. J. B. Venable of Carterville, Illinois for his gracious hospitality and aid in field reconnaissance.

Grateful acknowledgement is made to Dr. John L. Page, Assistant Professor of Geography, University of Illinois, for his very helpful suggestions and kindly supervision of this thesis.

CRAB ORCHARD LAKE

INTRODUCTION

POSITION AND SIZE

The Crab Orchard Project is a submarginal area in southern Illinois that is being developed by the Federal Government. The project is located almost wholly within Williamson County, and has an area of approximately 31,000 acres. This tract of land crosses the extreme southern boundary of Pleistocene glaciation and extends well into the Interior Plateau Province. The Crab Orchard country is served by four railroads and fine net of highways. This transportation system makes the project easily accessible from all directions. Figure 1 shows the general location within the state and the detailed outline of the project area.

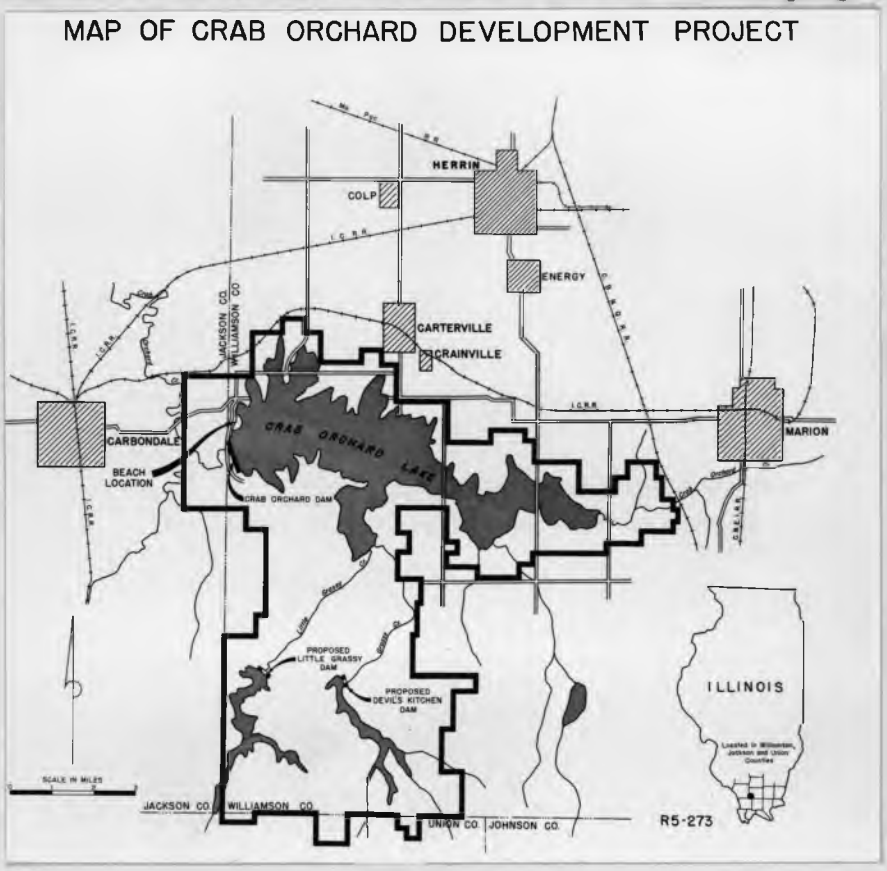

Figure 1.

The history of the land of Crab Orchard is a none too glorious one. Owing to a marked change in the policy of resource utilization, however, hope for "Little Egypt" is being rejuvenated. This renewed optomism finds its focus on the

creation of three reservoirs within the Crab Orchard Project and on the associated development expected to occur when this frequently thirsty land is assured of a permanent water supply.

NATURAL FEATURES

CLIMATE

The nature of the climate has had a marked effect on man's decision to create three artificial reservoirs within the Crab Orchard Basin, as well as to define the broader limits of the land utilization program. Broadly classified, the climate may be designated as Cfa.[1] The temperature is characterized by great extremes. This is strikingly exemplified by the range of 98 degrees between the absolute highest and absolute lowest temperature recordings for the month of January. The average annual temperature is 57.6 degrees; the average minimum, 46.1 degrees; the average maximum, 69.6 degrees; the absolute maximum, 113 degrees; the absolute minimum, -24 degrees; and the extreme range, 137 degrees. The highest average monthly temperature is recorded in July, and the lowest in January. The temperature changes are less extreme in summer than in winter, as the pressure areas of the continent are less well developed and the cyclonic storms move more slowly and at a higher latitude.

The average date of the last killing frost in spring is April 13; the average date of the first killing frost in autumn, October 22; the latest date of killing frost in spring, April 26; the earliest date of killing frost in autumn, September 24; the average length of the growing season, 192 days. As a result of the effects of air drainage this will vary some, depending upon the nature of the particular site in question. In accord with this, orchards are confined to the slopes and summits of the topography.

The heaviest precipitation occurs during the summer half year. Fortunately, the greatest precipitation of the year falls during the early part of the growing season. April, May, and June are the only months having over four inches average rainfall. These months have 4.02, 4.30, and 4.48 inches, respectively. The lowest

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1. Climate classified according to the Köppen system. Data obtained from the United States Weather Bureau, Climatological Data for the United States by Sections. Data appearing in this section are observations made at Carbondale, Illinois.

monthly precipitation, 2.84 inches, occure during the month of December. Thus the average distribution is relatively even throughout the year.

Most of the snow falls during January and February. These months, respectively, have an average of 3.97 and 4.30 inches of unmelted snowfall. The average annual unmelted snowfall totals 14.74 inches.

The reliability of precipitation is low notwithstanding the fact that the average monthly precipitation, the average maximum precipitation within twenty-four hours for each month, and the average number of days with precipitation in each month are fairly even throughout the year. Sometimes no moisture falls over long periods. On other occasions there is an excessive amount of precipitation within a relatively short time. A period in 1935-'36 is very illustrative of this unreliability. In 1935, during the period of June 10 to 20, inclusive, 5.41 inches of rain fell. This exceeded the amount of precipitation between December 1, 1935 and June 1, 1936.

Periods of Insufficient Precipitation

Year.	Number of successive days with total precipitation less than one inch.	Number of successive days with total precipitation less than .01 inch.
1931	34	19
1932	31	14
1933	47	23
1934	47	15
1935	26	17
1936	46	22
1937	38	16
1938	46	30
1939	62	25
1940	63	15

The Crab Orchard Project lies in the westerly wind belt throughout the year. Consequently, cyclonic storms occur in such frequency in winter that precipitation is dominated by them. Most of the summer precipitation results from convection. Prevailing winds are from a westerly direction throughout the year. So-called "Heat Waves" are frequent in July and August.

Prevailing Wind Directions by Months

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
W	SW	NW	SW	SW	SW	SW	SW	SW	SW	W	SW

Sixty-six per cent of the days during the period December to March, inclusive, are cloudy or partly cloudy. Maximum sunshine occurs during the months July to October, inclusive. The percentage of possible clear days during this period is sixty-one and one half.

LANDFORMS AND DRAINAGE

The topography in the area of the Crab Orchard Project may be divided into two principal regions: the young till plains in the north and the low, maturely dissected plateau in the south.

The Till Plains Section. The till plains section is for the most part underlain by the Carbondale group of the Pennsylvanian system. This formation is composed of shale, sandstone, and thin limestones, including one to six coal beds; Murphysboro (Number 2) coal at the base and Herrin (Number 6) coal at the top of the group. The shales are commonly gray or dark gray; the sandstones are generally micaceous and brown, medium to thin bedded; and the limestones are thin and impure. The thickness of the beds of this formation varies considerably from place to place, most of the beds being of a more or less lenticular character. "Coals number 5 and 6 which are the most important coals mined in the state lie just to the north of the project."[2] The configuration of the bed rock surface is largely obscured, however, by glacial drift (Illinoian), loess, and valley filling. The thickness of the drift varies greatly. Its effect on the topography of this section has been to subdue the irregularities and impart to it a more rounded aspect with gentler relief. In all probability the Illinoian sheet had an irregular front which had its southernmost extension in the northward-flowing tributaries of Crab Orchard Creek. The alluvium in this section is largely composed of fine silty and sandy materials and is found mostly along Crab Orchard Creek and the lower Big Grassy and Little Grassy Creek Valleys.

The Dissected Plateau Section. The dissected plateau section is part of a spur extending eastward from the Ozark Plateau in Missouri. The term "Illinois Ozarks" is frequently applied to this spur. The portion of the highland region

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2. Interview with Geo. V. Cohee of the Illinois Geological Survey.

A scene of the till plains section. Some of this land is now submerged by the waters of Crab Orchard Lake. (Courtesy, Soil Conservation Service)

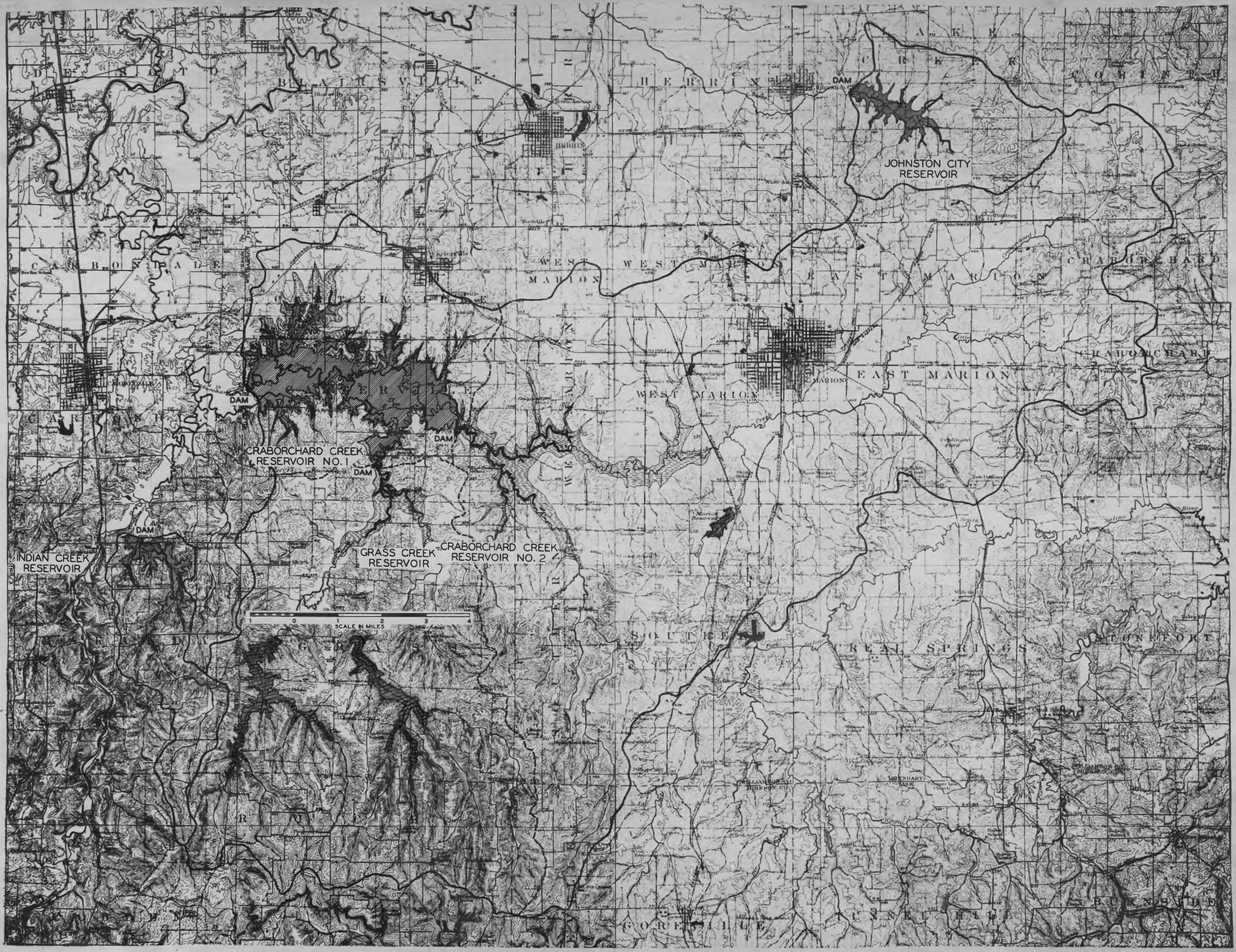
A scene of the dissected plateau section. Shows the area in and around Big Grassy Creek. (Courtesy, Soil Conservation Service)

lying within the Crab Orchard Project is underlain by the Caseyville and Tradewater groups of the Pennsylvanian system. Members of these groups that are exposed are the Battery Rock and Founds formations of the Caseyville group and Grindstaff and Delwood formations of the Tradewater group. This area is unglaciated and is maturely dissected. Relief is about twice as great as that of the till plains section. The valleys are locally covered by alluvium. The stream valleys are well defined and in their upper courses are usually headed by a series of gullies where the land has been denuded of natural vegetative growth.

Loess mantles both the till plains and the dissected plateau. It is non-calcareous, and its non-stratified character indicates deposition by wind. Erosion has removed quantities of it, especially from the slopes and valleys, although thicknesses of 15 to 30 feet are present in some locations. Faulting has occurred in the area and jointing has had a pronounced effect on weathering of rock. The local relief of the Crab Orchard Project area is approximately 375 feet, elevations above sea level ranging between 375 and 750 feet.

Drainage. All of the Crab Orchard Project drains into Crab Orchard Creek, the largest stream in the area. This stream flows into the Big Muddy River, a tributary of the Mississippi. Within the project Little Grassy and Big Grassy Creeks are the principal tributaries of Crab Orchard Creek. Crab Orchard Creek drains approximately 200 square miles of Williamson County. The volume of water discharged by this drainage system fluctuates widely depending upon the amount of precipitation, especially in the early spring when the vegetative cover is relatively meager, runoff is excessive and there is flooding of large areas in the stream valley.

A rock creek bed of an intermittent tributary of Little Grassy Creek. Lateral erosion is prominent where the general dip of the strata parallels the surface slope.


JOHNSTON CITY
RESERVOIR
DAM
CRABORCHARD CREEK
RESERVOIR NO. 1
GRASS CREEK
RESERVOIR
CRABORCHARD CREEK
RESERVOIR NO. 2
INDIAN CREEK
RESERVOIR
SCALE IN MILES
BLAIRSVILLE
HERRIN
CARBONDALE
WEST MARION
EAST MARION
CRAB ORCHARD
SOUTHERN
CREAL SPRINGS
STONEFORT
GOREVILLE
TUNNEL HILL
BURNSIDE
CORINTH
LAKE CREEK
DE SOTO

EARTH RESOURCES

WATER

It has been a very real problem in resent years to obtain an adequate supply of water for municipalities, mines, and farms throughout the Crab Orchard drainage basin. In fact it has been a matter of grave concern quite frequently throughout most of "Little Egypt".

Farmers, for the most part, obtain water from wells. This is often supplemented by a small artificial surface reservoir. Such a reservoir, usually located near the barn or in the permanent pasture, serves to supplement the livestock requirements.

Municipalities of the surrounding area have had to resort to the construction of surface reservoirs in order to insure an adequate water supply. In most places the glacial drift is thin and has little pore space. This makes it impossible to fulfill urban requirements from this source. Moreover, the drilling of deep wells is very costly and the water obtained from such wells is often highly charged with minerals. Water impounded in surface reservoirs has the advantage of having a low mineral content. Since the soil is generally compact, loss of water from a surface reservoir is chiefly through evaporation. The construction of surface reservoirs, however, has not solved the water supply question for urban use. The average annual precipitation is 41.89 inches but the reliability is low. It is during the prolonged periods of insufficient precipitation that the reservoirs become dangerously low. Following is a brief resume of the water supply for the three municipalities immediately adjacent to the Crab Orchard Project:

> "Carterville, a city of 2866 population, secures water from a reservoir located on Hurricane Creek. The direct drainage area is but 250 acres but replenishment is also had by over flow from the old Herrin reservoir, the storage capacity is about 155,000,000 gallons.
>
> "The filter plant has a capacity of 1,000,000 gallons per day, but the average daily demand is only about 35,000 gallons. The utility is owned by the Southern Illinois Water Company.
>
> "No additional facitities are needed at present."...
>
> "Marion, a city of 9,030 population, secures water from a reservoir located on Limb Branch, a tributary of Crab Orchard Creek and about 3 miles

south of the city. The reservoir has a drainage area of something over 3,500 acres and a storage capacity of 400,000,000 gallons. The site of the reservoir is not well chosen as it is of shallow depth and much evaporation takes place.

"During the past 5 years serious water shortages have occurred.

"The filter plant is not of modern design but on account of heavy debts it cannot be improved. Its rated capacity is 1,160,000 gallons per day.

"A new reservoir of greater capacity and a rehabilitation of the filter plant is desirable."

"Carbondale, a city of 7,800 population, secures its raw water from a reservoir located on Piles Fork about a mile southwest of the City. This reservoir has a drainage area of 2560 acres and a storage capacity of about 392,000,000 gallons.

"There have been times during the past 5 years when the storage became dangerously low. ...

"A new storage of greater capacity to supplement the present reservoir is highly desirable."[4]

Farmers of the Crab Orchard basin have found it necessary at times to haul water for their livestock. In addition coal mines have had to resort to various emergency methods to obtain enough water to operate their machinery. This has not only entailed considerable inconvenience and uncertainty, but has also greatly increased water costs.

[4] The State Geological Survey, The State Water Survey, and The State Natural History Survey, "Report on Basin of Big Muddy River," by The University of Illi-

SOILS

The following soil types are represented in the Crab Orchard Project:[3]

a. Hickory gravelly loam.
b. Bluford silt loam.
c. Wynoose silt loam.
d. Bonnie silt loam.
e. Sharon loam.
f. Loy silt loam.

The predominant soil type in the southern portion of the Crab Orchard Project is the Hickory gravelly loam. It has a productivity rating of 10. It is low in nitrogen and has a low organic content. Surface and subsurface drainage is slow to moderate.

The Wynoose silt loam and the Bluford silt loam are the most common types in the northern part of the project. They are found in the southern section but are not as prominent as the Hickory gravelly loam. The productivity ratings of the Wynoose silt loam and Bluford silt loam is 9 and 8, respectively. Their organic content is low; reaction, strongly acid. Both are low in potassium, nitrogen, and phosphorus.

The Bonnie silt loam is found along the lowlands of Crab Orchard Creek and the lower sections of the tributary valleys. Its productivity rating is 7; nitrogen content, low; organic content, low; and available amount of potassium and phosphorus, low.

The Bonnie silt loam is replaced by the Sharon loam along the middle and upper portions of the tributary streams of Crab Orchard Creek. This type is rated as 6; covers a relatively small areal extent; has a moderate surface and subsoil drainage; reaction is slightly acid; and the amounts of nitrogen, potassium, and phosphorus are variable.

The Loy silt loam is found in scattered interfluvial areas, mostly in the

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3. Information obtained through courtesy of Illinois State Soil Survey. The most productive soils of the state have a productivity rating of 1, and the least productive, 10.

northern part. Its productivity rating is 10; reaction strongly acid; surface and subsoil drainage, slow; and it has a deficiency of potassium, phosphorus, and nitrogen.

In summary, it will be noted that the most productive soil of Crab Orchard Project has a rating of 6. By far the greater part of the project has soils rated at 8, 9, or 10. Furthermore, the natural vegetation of all types represented is timber. The organic content of all types is low. The reaction is generally acid and the supply of nitrogen, potassium, and phosphorus is generally deficient. In addition, the soils are generally impervious. As a result of these factors there is a definite limitation on the variety of crops that can be produced without artificial fertilization, runoff of precipitation is rapid and serious erosion has resulted, the moisture-retentive capacity of the soils is poor and, consequently, crops suffer frequently and yields are markedly reduced.

VEGETATION

There are three major groups of plant associations in the project, namely: 1) the upland association, 2) the cliff association, and 3) the floodplain association.

The Upland Association. The water supply is the major factor determining the nature of the upland vegetation. The water supply is controlled by slope, exposure, character and depth of the soil, and the nature of the underlying rock. Oaks dominate the forest flora. White, burr, chestnut, red, and black oaks are among the varieties present, named in general order of their importance. Post and scrub oaks occupy the more xerophytic areas. These areas may also contain gum, sassafras, and ash trees. The scrub oaks are exiguous, while the white, burr, chestnut, red, and black oaks attain generous size. Second stands, however, usually are not as large. Scrub species are not numerous and the individuals are poorly developed. No species of plant is confined exclusively to either a shady or a sunny environment, although many exhibit a pronounced preference for one rather than the other. Rock barrens may develop where the surface slope is approximately parallel to the dip of the rock strata. Small plants find root in the very thin soil, while large shrubs and red cedar may grow in the deeper crevices.

The Cliff Association. The well defined cliffs have developed along some of the ravines. These cliffs support a distinct association of plant species. Heat, light, and moisture are prime factors governing the cliff vegetation. An appreciable plant growth may exist in the favored areas, while all but a few vegetative forms may be excluded in less favorable parts. Flowering plants subsist on small amounts of soil which have escaped agents of transportation. Ironwood, red cedar, ferns and various herbs are found growing on most cliffs.

The Flood Plain Association. Most of the larger tree specimens of this environment have been cut for lumber; however, a few virgin stands remain virtually untouched. Areas not subject to periodic inundation or are not too thickly shaded

support heavy undergrowth, sometimes so thick as to constitute tangled thickets. Frequently flooded areas, in addition to having a substantial stand of timber, may support a rank growth of weeds.

Following is a list of plant species found in the project area. The list was prepared by Harry B. Keller in cooperation with Southern Illinois State Normal University at Carbondale. [5]

Trees:

White Oak
Post Oak
Pin Oak
Black Oak
Sassafras
Sycamore
Black Cherry
Black Locust
Sugar Maple
Silver Maple
Box Elder
Dogwood
Virginia Persimmon
White Ash
Wild Plum
Catalpa
Red Cedar
Red Elm
Black Willow
Sour Gum
Overcup Oak
Burr Oak
River Birch
Pecan
Paw Paw
Ironwood
White Elm
Silver Poplar
Birch
Winged Elm
Black Walnut
Shag Bark Hickory
Mocker Nut Hickory
Red Mulberry
Crab Apple
Blue Ash
Peach
Pear
Red Bud
Pig Nut Hickory
Carolina Cottonwood
Black Gum
Shingle Oak
Black Jack Oak
Red Oak
King Nut Hickory
Swamp White Oak
Canada Plum
Sweet Gum
Basket Oak
Hackberry
Tulip Tree
Black Haw
Palm of Gilead
Beech
Slippery Elm
Black Maple

Flowers:

Honey Suckle
Wild Raspberry
Common Plantain
Milk Weed
Blackberry
Wild Phlox
Rough Bed Straw
Cypress Spurge
Early Goldenrod
Jack-in-the-Pulpit

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5. W. H. Schumke, Wild Life Survey and Recommendation Report for Crab Orchard Project, November 1939.

Flowers - continued:

Dewberry
Sumac
Brittle Fern
Larkspur
False Solomons Seal
Dwarf Sumac
Poison Ivy
Wake Robin
Hairy Blue Spider Wort
Alfalfa
Red Sorrel
Wild Onion
Field Garlic
Lilac
Shepards Purse
Bitter Dock
Chick Weed
Swamp Sourdock
English Plantain
Pasture Thistle
Bull Thistle
Wild Pansy
Tansy
Spice Brush
Large Blue Flags
Blood Root
Indian Strawberry
Spring Beauty
Black Mustard
Bluets
Mandrake
Dandelion
Field Daisy
Wild Carrot
Yellow Wood Sorrel
Marsh Marigold
Dutchman's Britches
Wild Geranium
Hazelnut
Dogfennel
Burdock
Butter Weed
White Clover
Elder
Small Cane

ANIMAL LIFE

Animal life in the Crab Orchard Project is relatively abundant. It is true that large areas of the timber have been cleared thus making it more difficult for most animals to secure a protective cover. But when viewed in relation to the entire state, the Crab Orchard Project is rather conspicuous as a habitat for wild game. Hunters and trappers are attracted to the vicinity and report finding the muskrat, otter, mink, raccon, weasel, skunk, squirrel, chipmunk, rabbit, opposum, coyote, and red and gray fox present. Over fifty bird species have been observed. Following is a list of birds reported in the area:[6]

Meadow Lark	House Wren	Mallard Duck
Blue Jay	Bob White	Brown Thrasher
Crow	Cardinal	Yellow Billed Sap Sucker
English Sparrow	Cuckoo	Whip Poor Will
Purple Martin	Black Bird	Indigo Bunting
Red Headed Woodpecker	Flicker	Ruby Throated Humming Bird
Robin	Mourning Dove	Spotted Sandpiper
Red Tailed Hawk	Barn Swallow	Downy Woodpecker
Cat Bird	Killdeer	Black Crested Titmouse
Mocking Bird	Wood Thrush	Orchard Blue Bird
Blue Bird	Schreech Owl	Carolina Chickadee
Great Blue Heron	Sparrow Hawk	Barred Owl
Carolina Wren	Tufted Titmouse	King Bird
Brown Creeper	Sand Hill Crane	Chickadee
Great Horned Owl	Belted Kingfisher	Starling
Pheasant (Ring Necked)	Sharp Shinned Hawk	Wood Pewee
Water Thrush	Marsh Hawk	Towhee
Song Sparrow	Brown Thrush	Lark Sparrow

Occupying the streams are warmouth bass, long eared, green, and flier sunfish, white crappie, black bullhead, spotted and sweet sucker, blunt nosed, redfin, and blackfin minnow, and horned dace. The minnows, black bullhead, and white crappie being the most numerous.

This abundant wildlife of the Crab Orchard Project constitutes one of the area's most valuable resources. Present project plans indicate that it will play an increasingly important role in the future; consequently, comprehensive measures are being employed to insure its preservation and to realize the potential develop-

6. Ibid.

ment.

MINERALS

The mineral resources are quite limited and are in great contrast to the rich resources of coal, limestone, petroleum, and kaolin proximate to the project.

Outcrops of the Pounds sandstone in the southern part might be used for construction purposes. Any utilization of them, however, is quite unlikely since outcrops of this same sandstone beyond the limits of the project are more favorably located for economic exploitation. Although the stone retains its color well when exposed to weathering, the lack of uniform color of the beds is objectionable for building purposes.

The rich coal beds of the Carbondale group that are mined extensively lie immediately north of the project.

Gravel deposits are largely of sandstone and are undesirable for construction use. Deposits of glacial sands are very local and are not utilized commercially.

A recent attempt was made to strike oil just beyond the southeast boundary of the project. Drilling operations were extended to a depth of 3,000 feet. The only result was the tapping of a "gas pocket." There are no oil wells within the project.

A stone quarry located southeast of the Devils Kitchen Dam. Material from this quarry is being used in the construction of the Devils Kitchen Dam and will be used in the Little Grassy Dam.

CULTURAL FEATURES

EXISTING BEFORE THE PRESENT DEVELOPMENT

POPULATION

Three hundred and eighteen families,[7] or approximately 26 persons per square mile, resided on the land before the government began its rehabilitation program. Many of these people were descendents of the early settlers who migrated from the mining and mountainous sections of Kentucky and Tennessee about a century ago. All of the population in 1936 was white and strictly rural although approximately half of them should not be classified as farming population since they derived the major portion of their income from working in the mines or from being on W.P.A. and county relief roles.

HOUSES AND SETTLEMENTS

The houses were constructed almost without exception from native timber. Artistic considerations entered little into the design, utility and initial cost being deemed much more essential. The general result was that most of the houses were frame structures possessing rather severe lines. Nevertheless most of them were substantial and served their purpose well. Economic conditions grew steadily worse in this area after 1920 as a result of a stranded mining population, a nation-wide depression, and general farming practices ill adapted to the land. There was a small minority of the population, however, who were able to adjust themselves to the vastly changed economic conditions. They managed their land well and maintained their farmsteads in good condition. The houses and other farm buildings were well painted. Their general appearance was further enhanced by neat fence rows and well kept surroundings. But the great majority of the population was unsuccess-

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7. Based on the number of tracts of land with buildings purchased by the government.

aful in reckoning with the economic vicissitudes of the period. Houses went unpainted and otherwise fell into sad disrepair. Barns and other farmstead structures suffered correspondingly. In addition, some of the houses were abandoned as the population commenced a gradual but unwilling exodus.

The pattern of the distribution of houses reflected considerable dispersal with no notable agglomeration anywhere. Areas along creeks subject to periodic flooding, however, were generally avoided. An additional deterrent to the flooding in these places was the mosquito and the dreaded malaria, formerly a noteworthy menace in the Crab Orchard drainage basin. On the other hand, hilltops afforded attractive views of the countryside. Houses located upon such a site were usually protected by some trees from wintry winds. Thus such a location was quite commonly selected. The most important factor determining the distribution of houses was the practice of locating them along a public road. This was not always a necessity but was highly desirable in most instances for the sake of convenience. The roads followed survey lines wherever practicable and so tended to impart a rectangular arrangement to the pattern where the topography was not too rugged. But in the more dissected section roads often followed the higher portions of the major interfluves and, consequently, were quite circuitous and the resulting pattern rather irregular.

Shown above are Mr. Baker, a tenant farmer of Crab Orchard, and his wife and daughter. Mr. Baker has a child not shown in the photograph who is now in school. (Courtesy, Soil Conservation Service)

View of the farmstead on the twenty acre tract occupied by Mr. Melvin Baker. Mr. Baker also rented additional land nearby to make a living. Observe the erosion pictured, also the general condition of the farm and farm buildings. (Courtesy Soil Conservation Service)

One of a number of farmhouses that was abandoned before the project was started and which will be obliterated. (Courtesy, Soil Conservation Service)

A winding country road in Grassy Township (in southern Crab Orchard).

A scene of another unsurfaced road in Grassy Township.

AGRICULTURE

Agriculture was the chief occupation within the Crab Orchard Project area in 1935. Generally speaking, all of the inhabitants were engaged to some extent in this occupation. The size of the farms averaged about 50 acres smaller than the state average of 137 acres. Most of the farms represented a small capital investment and provided a low income. A large proportion of the total income was realized directly from the farm in the form of produce consumed by the operator's family. Farm tenancy was comparatively low and may be attributed in some measure to the small-farm size and relatively low-priced land. Most of the tenant farms were rented on a share basis.

At the time of the government purchase, 41 per cent of the land was in pasture or range, 31.2 percent was cultivated, 26.3 percent was woodland, and 1.5 per cent was in orchard.

Farming methods remained relatively static. Cultivation of land best suited for forest or pasture continued. A soil-depleting crop rotation system was continued with only minor modifications. Little or no attempt at artificial soil fertilization was undertaken. Soil impoverishment went largely unheeded and effective methods designed to allay erosion were not practiced.

The principal crops produced were corn, wheat, and fodder. A limited amount of orcharding was also engaged in. Field crop yields were low. Soils with low productivity and farming practices ill adapted to the physical environment were conducive to this end. A small portion of the farm income was realized through crop sales.

The limited quantity of feed produced per acre restricted the carrying capacity of the farms for livestock. The result was that most of the farms had only three or four cows, a few swine, one or two teams of draft horses, and some chickens. Many of the farms kept only three to six brood sows. The cows supplied the family with dairy products; surplus cream was usually sold to a nearby cream station and

was an important item in the cash income. A few chickens furnished eggs and some meat for the owner. Any eggs and chickens produced beyond the home requirements were sold in town. Some of the eggs were customarily exchanged for grocery items not produced on the farm.

The poorest land was usually left in pasture or woodland. All of the livestock were greatly dependent on the pasture for sustenance during the spring, summer, and autumn seasons. Lespedeza, timothy, cowpeas, and some soybeans were planted for hay and served principally as the winter forage. The predominently acid soils precluded the growing of alfalfa without artificial fertilization. Manuring was inadequate because of the limited number of livestock. The application of lime was rare largely because of the expense entailed.

A majority of the farmers operated full-time general farms. These units required the full time services of their operators and constituted the sole source of livelihood. A second class of agricultural unit was the part-time general farm. These farms yielded a secondary source of income to their operators by supplementing the mining wage with shelter, fruit, vegetables, milk, eggs, and meat. When the mines closed the family derived all of their income from the farm unless they were forced on the relief role. A third type of unit was the general farm with a commercial orchard and/or garden. Only 1.5 per cent of the total land area was in orchard, but the investment involved, labor required, and cash returns were relatively greater per acre. Apples and peaches were the leading orchard fruits and important garden crops were tomatoes and strawberries. Orchard fruits had difficulty in maturing in approximately three years out of ten. Although the physical characteristics of the land were generally more favorable for orcharding than for grain farming, the capital investment was much larger and damaging frosts during the blossoming period and unreliable moisture curtailed any great expansion of the horticultural industry.

The average farm in the northern part of Crab orchard was smaller, but had

more crop land, a greater value per acre, and a greater value per farm than the average farm in the southern part of the project. The percentage of land rented was about the same between the two sections.

TABLE[8]

Unit	Average acreage per farm	Crop land harvested per farm
Carterville Township	71	41
Grassy Township	101	35
Illinois	137	81

Unit	Value of farm land and buildings		per cent of land rented by acreage
	Average per farm	Average per acre	
Carterville Township	$1523	$21	29.98
Grassy Township	1198	12	26.50
Illinois	9536	70	58.83

8. The above agricultural statistics are for the year 1935. Those for Grassy Township provide a close approximation for the southern dissected section of the Crab Orchard Project area and Carterville for the northern glaciated section. For township location, see topographic map. Fig. 2

The more dissected portions are usually woodland or woodland pasture. Numerous cliffs are present along the upper stream areas of Big Greasy and Little Greasy Creeks.

A peach orchard located on the north edge of Crab Orchard Lake

A "stake and rider" rail fence. Some of the rails in this fence are over fifty years old. Quite a few old rail fences still exist.

THE LAND UTILIZATION RECORD

When the white man came to the "Illinois Ozarks" he found a magnificent stand of forest. It was logical in view of the prevailing economic philosophy of the period that lumbering should become one of the most significant of the early occupations. Sawmills soon scattered through the area and became busily engaged in culling out the more desirable and obtainable trees. By 1900 this occupation had passed its hey-day and was on the decline. It had stripped much of the land of its forest growth and then had abandoned it.

Agriculturists did not await the passing of the lumberers from the region but worked simultaneously with them in the process of denuding the land of its forests. Plots of land were cleared and soil was turned by the plow. They discovered that although the soil was thin it produced well for a while. Immediate results induced more people to settle here and the growth of more extensive agriculture was hastened by the extension of the Illinois Central Railroad into the Big Muddy Basin and the improvement of already existing transportstional facilities.

Temporarily the population grew and became increasingly prosperous. These people had great faith in the soil and so great was it that they were quite oblivious to the deleterious effect being wrought upon much of their land by this type of land utilization. Then realization came of the great transformation that was occurring, but only after the problems had attained such a magnitude that they seemed insurmountable for individual initiative. One of the first indications of the change taking place was the gradual abandonment of the practice of growing wheat as the major crop. This trend had become clearly evident by 1900. Then within the time space of three and one-half decades there came such developments as a marked falling of the ground water table. Wells went dry and the water supply problem was becoming increasingly acute. Corn and other grain crop yields remained static or decreased while yields for the state were showing a decided general improvement. Flooding of extensive bottom land areas was occurring more often. Droughts and

crop failures increased in frequency. The first signs of a population decrease were being evidenced. Some areas formerly cultivated were being abandoned by the plow. Tax delinquency multiplied. Land prices dropped. Farm improvements were being neglected. Incomes were decreasing and soil erosion menaced ever greater areas. Furthermore, the gravity of the situation was aggravated by unfavorable developments in the Illinois coal industry as well as by a nation wide depression. One hundred and forty-five of the three hundred and eighteen families had been or were on relief by 1935. It seemed imperative that a new policy be adopted at once.

Severe gully erosion adjacent to a peach orchard. Location is in Grassy Township.

THE PRESENT DEVELOPMENT

FOREWORD

"Little Egypt" was in a serious economic plight in 1935. No diversified industries of importance existed and the economic status was largely determined by factors governing coal mining and agriculture. It had been known for a long time that there were huge coal deposits in the Big Muddy River Basin and at an early date coal was mined, loaded on barges, and then shipped down the Big Muddy River. At that time this was the only practicable means of transportation. The mining of coal was necessarily confined to restricted areas because of obvious limitations imposed by complete reliance upon river transportation. But railroads soon realized the freight possibilities and extended lines into the Big Muddy Basin. New sections within the basin were now able to mine and market coal. The mines due to favorable conditions, i.e., a good quality bituminous coal present near the surface and located on a plains region close to a growing interior market, were able to mine the coal at a low cost per ton and put ever increasing amounts on the market.[9] Coal production continued to soar upward to the year 1921. That year tons of coal mined in Williamson County alone reached a peak of 10,204,949.

Concomitant with expansion of mining operations was a notable increase in population and economic prosperity. Although no large city developed, a number of small ones sprang up in proximity to each other and Williamson County's average population density surpassed 100 persons per square mile. The miners received good living wages and the whole region prospered. Farmers had a profitable local market for their produce. New highways were constructed, many new homes, churches and schools were erected. Public utilities fared well. Professional men and others engaged in rendering services shared in the economic prosperity. This activity, however, was of limited duration.

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9. A product of this growth is the Orient #2 Mine, located in West Frankfort. It is reputedly the largest bituminous coal mine in the world. At one time it had a payroll of 2,000 men.

Coal production as a result of a new wage adjustment, "The Jacksonville Agreement," began a decline in the Big Muddy Basin in 1922. Union coal companies, in compliance with this agreement, were to pay an eight dollars per day basic wage. This was advantageous to non-unionized fields which now possessed a relatively low wage scale and consequently were able to capture some of the coal market of the unionized fields. Not only did the mines of southern Illinois suffer from this, but in addition a differential freight rate was established from the Virginia and Kentucky coal fields. This enabled these fields to market coal in the Chicago market at a lower price than the Illinois fields. With such a decline in coal production in southern Illinois, payrolls were decreased. Mechanization of coal mining operations took more men out of the mines and payrolls continued to fall.

	1923	1932
Combined payroll of coal mines, railroads, and public utilities in Williamson County.	$16,333,860.	$ 2,977,596

The result of the decline of coal mining was devastating to the region. All of the 14 banks within Williamson County closed. The coal miners, men engaged in transportation, shop men who installed and repaired the machinery, merchants who served the miners' families, and farmers who had a market with these people -all suffered.[10] The desirability of having a diversified development of resources was now acutely realized.

In view of the unemployment situation and the agricultural status, the Federal Government organized the Crab Orchard Project in February, 1935. Work was commenced in October, 1936. This project has been under the administrative authority

10 In 1934, according to the Illinois Emergency Relief Commission's Biennial Report, 48.4 per cent of the total population of Williamson County were on relief.

of the United States Department of Agriculture with immediate control of the development now under the Soil Conservation Service.[11]

The project plans provide that measures be taken for:

1. Wild Life Development.
2. Recreational Development.
3. Reforestation.
4. Water Conservation and Flood Control.

The development of a comprehensive long-term plan has been difficult and complicated. Contributing to this is the appropriation of funds in amounts adequate to cover only relatively short time periods. This greatly impedes the efficient execution of a long-term plan. Moreover, the transfer of the project from one division to another within the Department of Agriculture has altered the emphasis placed on various objectives and has tended to obscure somewhat certain features of the development program.

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11. Formerly the Crab Orchard Project was under the R.A., F.S.A., and the B.A.E.

THE DEVELOPMENT PROGRAM

The acquisition of the land was one of the first steps undertaken in the development program. It was first intended to secure all tracts within certain boundaries but options were later taken on 25 or 30 tracts not essential to the development. The total size of the project is approximately 31,000 acres. By March, 1938 approximately 16,000 acres were either accepted for purchase or paid for. To that date the average price paid per acre was about $23 on optioned land. Some of the land in the northern portion required condemnation in order to "block in" the area needed for the lake development. The average price paid per acre for the condemned land up to March 1938 was $48. Government loans were made to the vendors of the land to tide them over financially until titles were cleared and the actual payments were made. Most of the farmers reacted favorably to the purchase of their land by the government. With the money received in the sale of their land they were able to secure more desirable farms in other sections of the state. Some difficulty, however, has been encountered with two other groups of vendors. Southern Illinois was settled at an early date and some of these farms had remained within one family line since pioneer days. These people were strongly attached to their land because of the sentiment involved. No amount of money would be compensatory for such deep attachment as these people possessed for their homes. Consequently, they resisted all efforts by the government to secure their land. Another group of owners were interested, seemingly, in securing every last cent the government would pay regardless of the value of the land. Some difficulty was entailed in purchasing land from the last two groups, since a price satisfactory to the parties involved could not be agreed upon. In order to set a price on the land, it was necessary to resort to court action. Considerable unfavorable public sentiment was aroused. However, most of the land has now been acquired; a few court cases are still pending. Other factors were also injected into this matter. Some felt that the project was the product of ulterior political motives. This, and other feeling

has been quieting, however, and unfavorable public sentiment towards the project has now largely subsided. By December 1, 1940 30,254 acres had been acquired.

"The reasons substantiating the purchase of this land by the Resettlement Administration have been summarized in a project report as follows:

1. 'This land is largely submarginal, and is classified by the State Land Use Planning Board as an area in which the farms are too small.

2. 'The bottom lands involved in the purchase area are very poorly drained, subject to overflow almost annually, with the result that three crops out of five are all that can be counted upon. The slopes are subject to serious sheet and gully erosion, and the ridge tops are badly damaged by drought nearly every year because they do not carry sufficient humus to resist long periods of dry weather.

3. 'A great deal of the acreage is owned by part-time operators who find outside employment when it is available. This condition results in serious neglect of the land, which further contributes to its unproductiveness.

4. 'Many of the tracts are too small to be economic operating units, with the result that economic pressure forces utilization of this land for purposes for which it is not best suited.

5. 'Evidences of rural poverty are prominent on many of the tracts, and it has been demonstrated in the case of owners who have already been paid for their land in this project that they can move to other sections of the State and secure more productive and all around desirable farms for the amount of money they receive in the sale of these properties.'"[12]

The most prominent feature of the development is Crab Orchard Lake. This lake was formed by constructing an earthen dam across Crab Orchard Creek very near the Williamson-Jackson County line. The dam is of rolled earth fill construction and has 347,400 cubic yards of earth fill. It is 2,960 feet in length, and has a spillway crest 450 feet long with a flood capacity of 22,000 cubic feet flow per

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12. Daniel F. Bosma, Public Finance Specialist, Regions II and III, Farm Security Administration. "Public Finance Analysis of the Crab Orchard Creek Project, Williamson County, Illinois," p.8. Milwaukee, Wisconsin, May 1939.

second. The top width of the dam is 12 feet; the maximum base width, 208 feet. The dam has a crest altitude of 415 feet making the maximum height 35 feet.

Dimensions of the Watershed

Mean length	32 miles
Mean width	6.7 miles
Area	215 square miles

Dimensions of Crab Orchard Lake

Maximum length	8.5 miles
Maximum width	5. miles
Average depth	10.7 feet
Greatest depth	25. feet
Storage capacity (72,725 acre feet).	24 billion gallons
Area of water surface at spillway level	6,910 acres

Two subsidiary lakes will be formed south of Crab Orchard Lake by the construction of the Devils Kitchen Dam on Big Grassy Creek and Little Grassy Dam on Little Grassy Creek. The spillway level of these dams will be 105 and 95 feet, respectively, above the level of the spillway of Crab Orchard Dam.

Dimensions of Big Grassy Lake

Area of water surface at spillway level	900 acres
Storage capacity	9,196,000,000 gallons
Maximum depth	90 feet

Dimensions of Little Grassy Lake

Area of water surface at spillway level	1,000 acres
Storage capacity	8,540,000,000 gallons

The Devils Kitchen Dam, now under construction, will be a gravity type concrete dam; the Little Grassy Dam, not yet constructed, will be a rolled earth fill

Little Grassy Creek. The dam will be constructed across the creek just this side of the belt of trees. (Courtesy, Soil Conservation Service)

Big Grassy Creek below site of the Devils Kitchen Dam.

Site of Devils Kitchen Dam.

dam.

The following table indicates some of the work planned and the amount accomplished by the end of 1940. In addition to this 5,821,000 trees had been planted by March 1, 1941, [illegible]. Species planted were Shortleaf, Loblolly, Virginia, Norway, and Pitch Pine, White and Green Ash, White, Red, and Burr Oak, Red Cedar, Tulip Poplar, Red Gum, Black Walnut, Black Cherry, Osage Orange, and Black Locust. Future planting planned is about four million trees.

CRAB ORCHARD PROJECT[13] 12/31/40

practice	unit	after planning or planned to date	accomplished to date
Controlled grazing			
pasture	acres	3,369	979
cultivated land	acres	80	0
animal units	number	1,685	377
Fencing	miles	41	0
Liming	acres	3,369	0
Planting new permanent pasture	acres	3,369	120
Planting permanent hay	acres	408	0
Planting hedges	linear feet		
Planting, woody	acres	6,424	4,154
Planting old pasture	number of shrubs	500,000	158,956
Replanting, woody	acres		142
trees	number		129,930
shrubs	number		0
Roads and trails	miles	30.69	25.04
Seeding and Sodding	acres	4,398	530

13. Information through courtesy Soil Conservation Service, Carbondale, Illinois

Additional Improvements, March 1941

	Approved	Completed
Picnic areas	11	3
Parking areas	12	4
Outdoor fireplaces	100	40
Boathouses	4	0
Shelterhouses	7	1
Outdoor latrines	24	8
Signs and markers	300	160
Miles of foot trails	15	0
Well-water systems	11	3
Waste disposals	100	40
Boat docks	38	8
Bathhouses	2	1
Bathing beaches	2	1
Miles of power line	3	1
Miles of park road	30	20

Clearing the timber from the lake beds before flooding was necessary for recreation and other possible developments. All of the wood from the Crab Orchard lake bed was utilized. Some of it was employed as structural material for the boat docks, bathhouse, shelterhouses, hiking and picnicing facilities, bridges, temporary buildings, fences, and culverts. Part of it was given to families on relief for use as firewood. The remainder was sold to private individuals.

Twenty miles of public roads have been inundated or abandoned. Fifteen miles were dirt roads. The remainder were hard surfaced. Four and one-half miles of State Highway 13 were relocated one-half mile to the north. The Foreville School and Church had to be abandoned. Four cemeteries, having a total of 182 graves, were transferred to a site located north of Crab Orchard Lake. A small merchandise store had to be abandoned. In addition, six and one-half miles of telephone lines required relocation.

The location of a large modern airport is being contemplated. Present indications are that it would be located at the north edge of Crab Orchard Lake, about five miles east of Carbondale. Such an airport could accommodate both land and sea planes.

Approximately 75 per cent of the expenditure of the project, excluding acquisition, has been on labor.[14] The remaining 25 per cent was for materials and equipment. About $3,620,000 had been spent on the acquisition and development by March, 1941. The sum of $2,400,000 is approved for the next two years. The date for the completion of the development has been tentatively set at June, 1942.

LAND CONVERSION [15]

Land Uses	Before Planning (acres)	After Planning (acres)
Cultivated	9,300	1,000
Permanent hay	———	121
Orchard and vineyard	448	———
Pasture or range	12,230	4,710
Forest range or wooded pasture	———	———
Woodland	7,819	14,028
Lakes	———	8,883
Wildlife	———	458
Recreational	———	582
Miscellaneous	———	15
Total	29,797	Total 29,797

14. A man-month, including technical supervision, costs about $60.00. About 18 days equals a man-month on the project.
15. Information through courtesy of Soil Conservation Service, Carbondale.

REFORESTATION AND FLOOD CONTROL

Flood control is of the utmost importance if the program for future development is to be realized. Originally the project area was largely covered with a heavy stand of forest, and floods causing great damage were not a serious threat to the welfare of the land. Some of this virgin timber, which had over 6,000 board feet per acre, still stands but most of it has been cut over for material suitable for cross ties, saw timber, and mine timbers. Flooding has become increasingly frequent in recent years. Three severe floods occurred during 1936 and 1937. In 1937 over one-half mile of State Highway 13 near the Williamson-Jackson County line was inundated. The highway had a six foot fill and the flood waters covered the highway to a depth of two feet. Motor traffic was rendered impossible and it was necessary to replace the shoulder for the whole length of the fill on the downstream side.

Soil erosion is one of the most destructive results of flooding. Williamson County has suffered much more than the state as a whole and the Crab Orchard Project is one of the worst eroded sections in Williamson County.

Estimate of Soil Erosion[16]

Degree of erosion	Williamson County	State of Illinois
destructive	16.7 per cent	8.7 per cent
serious	43.2 " "	8.8 " "
harmful	22.3 " "	35.4 " "
negligible	17.8 " "	47.1 " "

16. Dept, Agronomy, University of Illinois.

Three methods of establishing flood control are:

1. By holding back flood water in reservoirs during periods of excessive precipitation and releasing it gradually, or

2. By straightening channels and constructing levees, or

3. By vegetating slopes so as to delay runoff.

The first method has no effect on flood waters above the reservoirs. However, flooding is usually most destructive in areas downstream from the sites where the reservoirs most likely would be located. In time though the reservoirs will lose much of their effectiveness through sedimentation causing a loss of storage capacity. Yet reservoirs may be a valuable aid in times of extremely heavy precipitation.

The third method is control through prevention. Not only do floods render great damage downstream by destroying buildings, crops, communication lines, etc., but inestimable losses result from plant food and soil removal throughout the watershed. A well vegetated watershed is provided with a blanket of leaves and litter that not only delays runoff but allows a much larger amount of moisture to be absorbed by the ground. The result is a reduction in the peak flood and maintenance of flow during periods of drought.

At present the dam on Crab Orchard Creek has little value in flood control since it has no means of retaining flood waters. If, however, flood gates were installed on the spillway of Crab Orchard Dam the danger from floods below the dam could be alleviated. The installation of flood gates on Crab Orchard Dam is being studied and indications are that the spillway will be equipped with them.

An extensive program of reforestation is being carried out, as has already been indicated.[17] Tree plantings and proposed plantings total about nine million.

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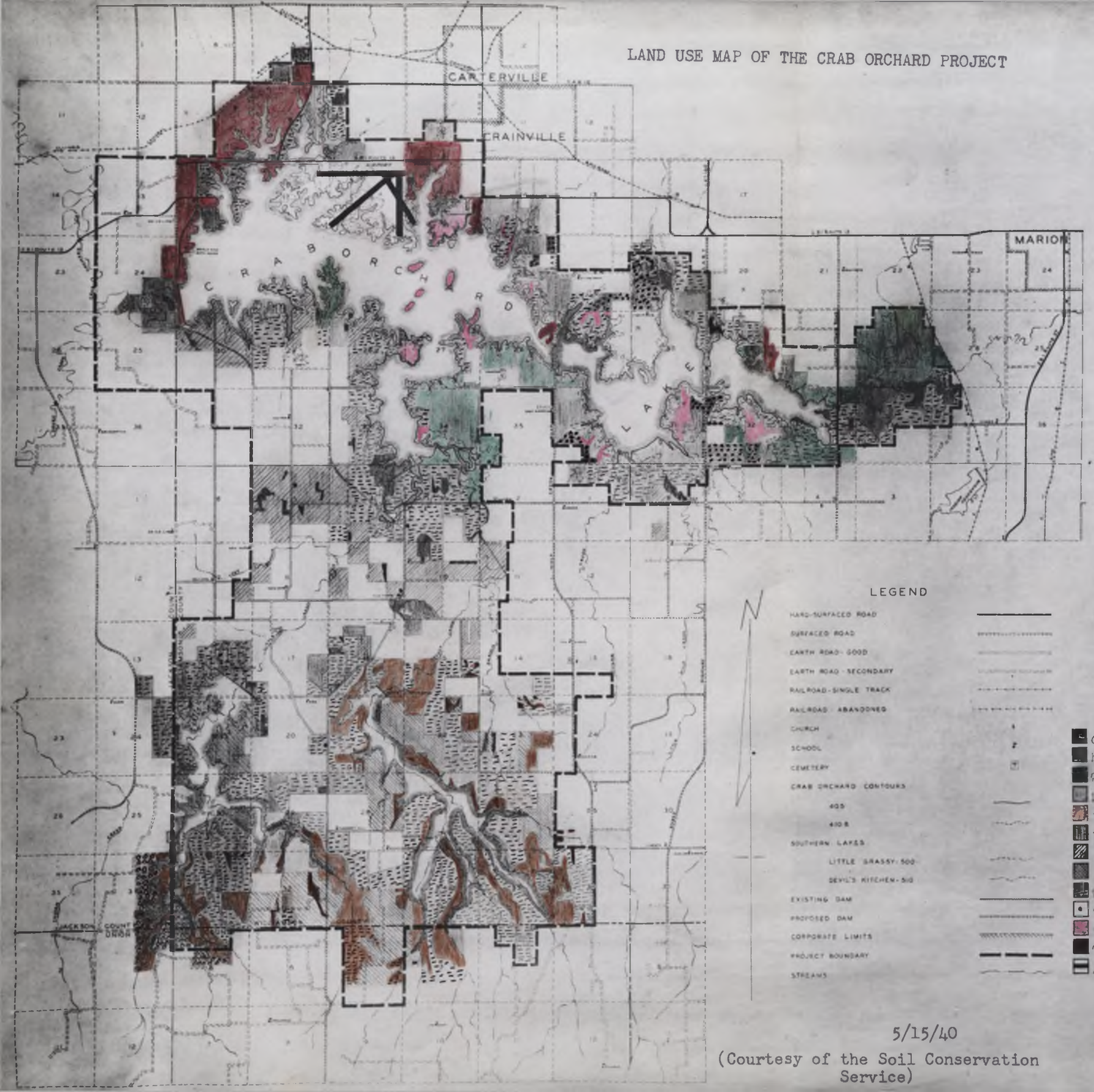
17. See map on following page.

LAND USE MAP OF THE CRAB ORCHARD PROJECT



5/15/40

(Courtesy of the Soil Conservation Service)

These plantings are being made in both the northern and southern portions of the project and will serve to check erosion and thus lessen sedimentation in the reservoirs. The water of the reservoirs will be much more habitable for aquatic life if it is kept relatively clear. Moreover, if silting were too heavy the reservoirs might become completely filled and thus be rendered useless for flood control, recreational, or industrial use. One hundred and fifty-eight million tons of sediment would be required to fill the Crab Orchard reservoir. Stated differently, an average soil loss of seven inches over the entire watershed would produce the same effect. The filling of the reservoirs might be accomplished in a comparitively short time if methods to check silting were not employed.

In addition to controlling erosion, reforestation will provide a protective cover for wild game and thus is of importance to the wild life development. Moreover, the value of reforestation in furnishing additional lumber should not be overlooked. "At present Illinois is a heavy consumer of wood products and pays from twenty-five to thirty million dollars a year on freight on timber shipped into the State. Lands in the State suitable only for the raising of trees, if producing trees at full capacity, would be of material help in reducing this freight bill."[18] It has been proposed that the United States Forest Service administer the area after the development work is completed. This may be conveniently affected in view of the fact that the Shawnee National Forest Purchase Unit adjoins the Crab Orchard Project on the south and on the west.

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18. Anton J. Tomasek, "State Forestry in Illinois," Illinois Academy of Science Transactions, p20, 1939.

A scene of the more dissected portion within the Crab Orchard Project. Trees are concentrated largely along the stream valleys. (Courtesy Soil Conservation Service)

Severe soil erosion on the north edge of Crab Orchard Lake.

WILDLIFE DEVELOPMENT

The Crab Orchard Project is admirably located for woodland and wildlife development. It is very near the Mississippi River which is the fly-way for Canadian geese, as well as for numerous species of ducks. Surveys of the project have been made by the Illinois Natural History Survey, Bureau of Biological Survey, United States Forest Service, Soil Conservation Service, and the Illinois State Conservation Department for the purpose of determining what environmental improvements could be made for wildlife. Then, the "Wild Life Survey and Recommendation Report for Crab Orchard Creek Project" by W.H. Schumke, Soil Conservation Service, was made in 1939 with recommendations, having in mind the previous surveys. These plans have been designed to include waterfowls, fish, fur-bearers, and upland game. The map on the following page designates development in effect or proposed on and near Crab Orchard Lake.

Crab Orchard Lake has been stocked with bass, perch, crappie, and bullhead cat. The first stocking took place in August, 1940. Commercial seining areas have been cleared of stumps and snags and marked for use by commercial fishermen. It is estimated that this lake may be expected to produce annually between fifty and one hundred pounds of carp and buffalo per acre of water, or a total annual production of about one-half million pounds. Some of the fish could be marketed in southern Illinois; the remainder could be sold in the St. Louis and Chicago markets. These species of fish to not hook well and commercial seining will provide a means of harvesting them. These commercial seining areas will be regulated in accordance with state laws. In addition to buffalo and carp, it is estimated that the lake will provide hook and line fishing for about five thousand licensed anglers.

Other wildlife development work includes the placing of loose stumps in shallow inlets and bays to provide homes for muskrats. Provisions have been taken to provide nesting sites for wood ducks. In 1940, fifty acres were seeded to aquatic

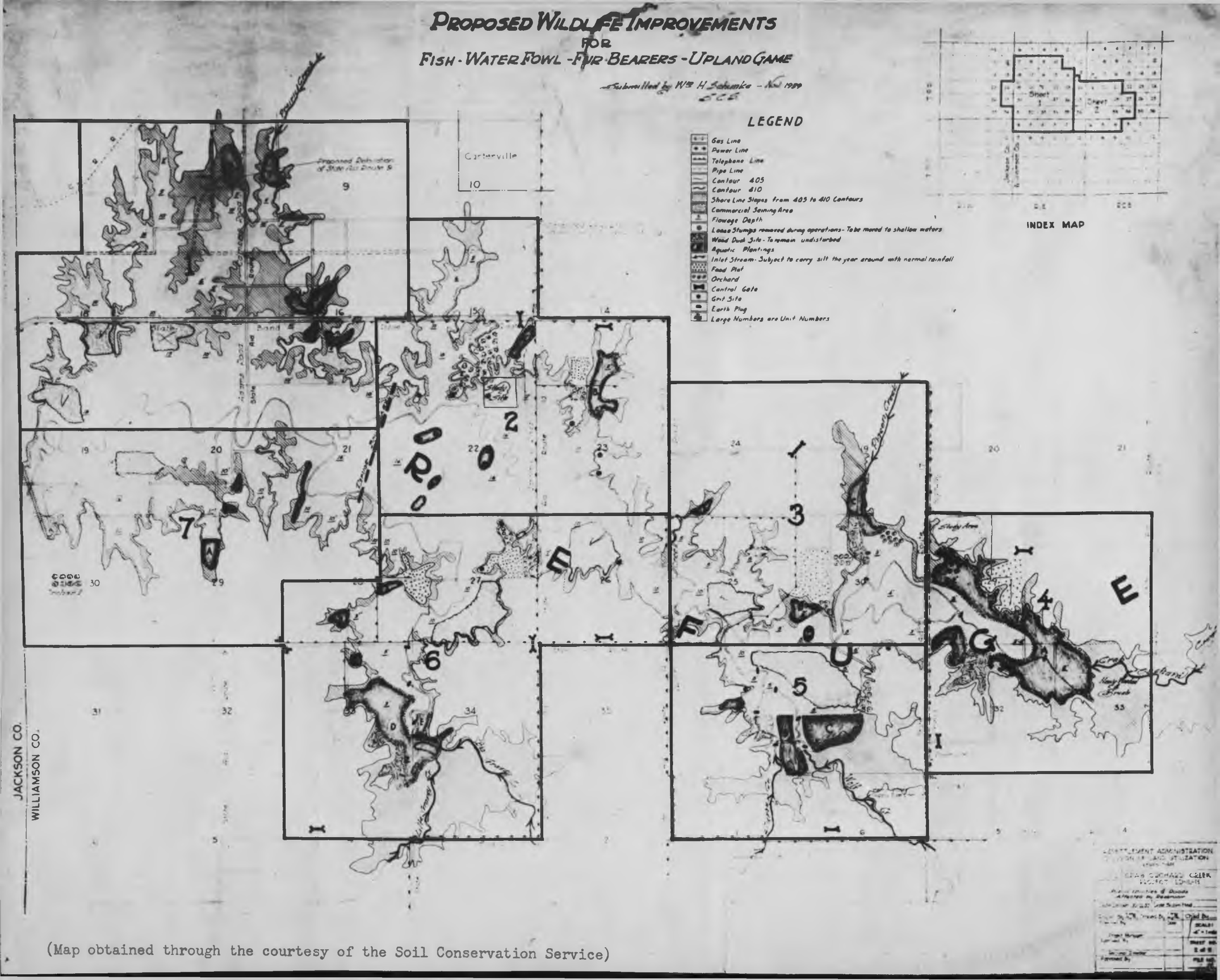
plants for food for migratory waterfowl. One hundred and sixty acres of corn were planted especially for geese. Approximately twenty small food plots have been planted in the southern part of the area to furnish additional food for upland game. Local sportsmen have supplied some seed for feeding plots. Numerous grit sites are also being furnished for the birds. The eastern half of Crab Orchard Lake and surrounding lands have been set aside as a migratory waterfowl refuge.

This project bids fair, in view of the wildlife development being promoted under the surveillance of the Soil Conservation Service and in view of the natural setting, to become a very popular haunt for both the sportsman and the naturalist.

Southern Illinois State Normal University, located at Carbondale, has selected some areas within the project for study. These areas are designated on the preceding map. Because of their proximity to Carbondale and the nature of the development, they should lend themselves readily to various types of nature study and scientific research.

PROPOSED WILDLIFE IMPROVEMENTS
FOR
FISH - WATER FOWL - FUR BEARERS - UPLAND GAME

Submitted by Wm H Sakunke - Nov 1959
SCS



(Map obtained through the courtesy of the Soil Conservation Service)

RECREATION

The Crab Orchard Project affords a variety of forms of recreation including hunting, fishing, boating, swimming, hiking, and picnicing.

The recreational development provides for the construction of two bathing beaches and two bathhouses. The beach and bathhouse to be used by the whites are already completed and are located on the north side of Crab Orchard Lake near the dam. The beach and bathhouse for colored visitors are not yet under construction but will be located approximately one mile northeast of the other beach. Large parking areas will be associated with each beach. Concessions are being let for these areas to accommodate the crowds.

The first stocking of Crab Orchard Lake with fish was in August, 1940 and by the spring of 1941 large numbers of fishermen were coming to Crab Orchard Lake. This was due principally to three factors. In the first place, there is a scarcity of lakes in southern Illinois suitable for fishing. In the second, good highways lead to the project from all directions. In the third place, the lake is well adapted to the support of aquatic life and the number of fish is increasing rapidly.

Thirty-eight boat docks and four bathhouses will be built, eight of the boat docks having been completed. Great enthusiasm was already being displayed in the summer of 1940 for boating on Crab Orchard Lake, although the reservoir was only partially filled. Many types of boats were launched; both sailboating and motorboating were popular.

Many birds, the diversity of land forms, the blossoming trees native to the area (such as the Sarvis, Dogwood, and Red Bud) and abundant wild flowers help to make this one of the attractive areas in the Middle West for hiking and picnicing. The wild life is especially beautiful along the upper stream courses of Big and Little Grassy Creeks where some virgin stands of timber still exist and the topography is more rugged. Thirty miles of park road, fifteen miles of foot trails,

seven shelterhouses, eleven picnic areas, and one hundred outdoor fireplaces are being constructed for the convenience of people desiring this type of recreation.

The reports of gunfire are frequent during the hunting season and bagging the limit is nothing extraordinary. Hunting is allowed only in the western part of the project. The more common types of game in the area include the rabbit, squirrel, racoon, quail, and migratory waterfowl. Plans are now being made for fox hunts since both the red and gray fox inhabit the southern part. Trapping is allowed and is regulated by the State Conservation Board.

One of the greatest values to be derived from the Crab Orchard Project should be realized in the form of recreation. Advantages of the project for recreational purposes are:

1. It is within a four-hour drive of a large population, including the St. Louis urban area.
2. There is a scarcity of lakes in southern Illinois suitable for recreational development.
3. There is a dearth of most other forms of recreational facilities.
4. The project is more accessible and more economical to use for recreation than the "north woods" for the people of southern Illinois. Some people who were financially unable to go to the "north woods" may therefore use this area.
5. The recreational season is longer that that of the "north woods" because of climatic differences.
6. Four railways, Illinois Central; Missouri Pacific; Chicago and Eastern Illinois; and Chicago, Burlington, and Quincy, serve the area.
7. A fine net of highways make the project easily accessible from all directions.
8. The development is suited to a wide variety of recreational activities.

Disadvantages of the Crab Orchard Project for recreation are:

1. The summers are hot. In this respect the area is definitely inferior to the "north Woods" which have attracted many people from Illinois.
2. Mosquitoes are annoying in the summer. Malaria is endemic to the Big Muddy River Basin but now this danger has been almost eliminated.[19]

The provision of recreational facilities is no longer generally regarded as a luxury. Our population is receiving more leisure time and is becoming increasingly mobile. Consequently the demand for recreation areas has undergone a marked growth. In view of this and the dearth of recreational facilities of the region such a development as the Crab Orchard Project is desirable. While the project may be examined as a separate unit, it should nevertheless be regarded not as an isolated unit, but as an integral part in the development of a broad recreational system.

One cannot evaluate the Crab Orchard Project by increased opportunities to sell goods and services. This is sometimes used as the basis of worth of recreational development. However, in using such a basis one does not account for returns derived in the form of health, satisfaction, and pleasure. Suth things are impossible to evaluate on a monetary basis.

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19. T. F. Barton. "Recreational Possibilities of the Shawnee National Forest Purchase Units" Illinois Academy of Science Transactions, pp. 149-152, 1939.

The Crab Orchard beach and bathhouse for use whites. Location, north edge of the lake near the Crab Orchard Dam. The lake bed was only partially filled at the time this picture was taken.

A general view of a part of Crab Orchard Lake. Boating is one of the popular recreational activities. (Courtesy, Soil Conservation Service)

INDUSTRIAL POTENTIALITIES

Industrialisation has been suggested as a partial remedy for the unemployment, the decline in coal mining, and the agricultural situation in southern Illinois.

One of the great deterrents in the past to industries locating in southern Illinois has been inadequate water supply. Although the annual precipitation exceeds 40 inches, runoff is great and the reliability is low. No large ground reserves can be tapped. The water supply has, however, been greatly altered by the creation of three reservoirs within the Crab Orchard Project. When completed these reservoirs will provide a water storage capacity of over forty billion gallons. The estimated average annual runoff of precipitation is well over three times the reservoir capacity. Such an augmentation in water supply is enough to meet local deficiencies and to supply a large amount of water for future industrial requirements.

Advocates of industrialisation in southern Illinois point to the rich mineral reserves in this area. Cheap power may be realised from Illinois' enormous bituminous coal reserves, estimated to be larger than those of Great Britain. Moreover, the Crab Orchard Project is adjacent to one of the world's most productive oil fields. Oil production in Illinois has undergone a phenomenal rise since 1937. Furthermore, southern Illinois is rich in limestone and fluorspar.

Southern Illinois, although containing no large cities, has a fairly dense population. The city of Herrin is at the approximate center of the densest agglomeration in southern Illinois and is within ten miles of Crab Orchard Lake. A population of 200,000 live within a radius of twenty-five miles of Herrin. One out of every ten of these people were unemployed in 1940. Moreover, "the labor supply is characterised by a high degree of mobility arising from the fact that the chief industrial employment, coal mining, necessitates daily commuting of from five to

thirty-five miles."[20]

Crab Orchard offers, in addition, a favorable site for industry seeking:

1. Low living costs for workers,
2. Cheap land for plant location and future expansion,
3. Nearness to the center of population in the United States,
4. Good transportation facilities,
5. A location which from a military viewpoint is one of the more invulnerable parts of the United States,
6. A location having neither a harsh winter nor an enervating summer climate.

Southern Illinois is becoming increasingly conscious of its resources and is attempting to develop them. An important factor in this is the collective organization of the cities of nine counties into Southern Illinois Incorporated. The five actively participating counties are Williamson, Franklin, Perry, Jackson, and Union. They have as their objectives:

1. "To rehabilitate southern Illinois by bringing in industries to give employment,
2. To secure and expand our present industries as a solution to our economic problem,
3. To develop and exploit our recreational and historical possibilities, realizing that the tourist industry is a major industry,
4. To develop and expand our educational institutions with the idea of making the Southern Illinois State Normal University a college of Liberal Arts so it can furnish leadership and direction not only to our other educational institutions, but can lend itself directly in

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20. J.B. Parrish. "Potential uses of the reservoir of unemployed labor in the Southern Illinois Industrial Area for purposes of the National Defense Program." (Unpublished)

the study and solution of economic and social problems in southern Illinois."[21]

As yet no major industry has been set up since the completion of the Crab Orchard Dam. Southern Illinois Incorporated is, however, trying to present a picture of the region's resources to industries having prospective interests. Whether any industries will be attracted to the area is still purely a matter of conjecture.

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21. Interview with O.W. Lyerla, President of Southern Illinois Incorporated, Herrin, Illinois.

SUMMARY

The geography of the Crab Orchard country has undergone marked changes since the white man first settled the area. Natural forces have remained much the same, but man's changing activity has increased the effectiveness of these natural forces. It goes without saying, that man has, since his first settlement, persistently modified the cultural landscape. The keynote to the first period of change was exploitation of the forest and soil without regard for the future. Today this area is the scene of purposeful controlled resource development the significance of which is apparent only when viewed in both its intra and inter-regional relationships.

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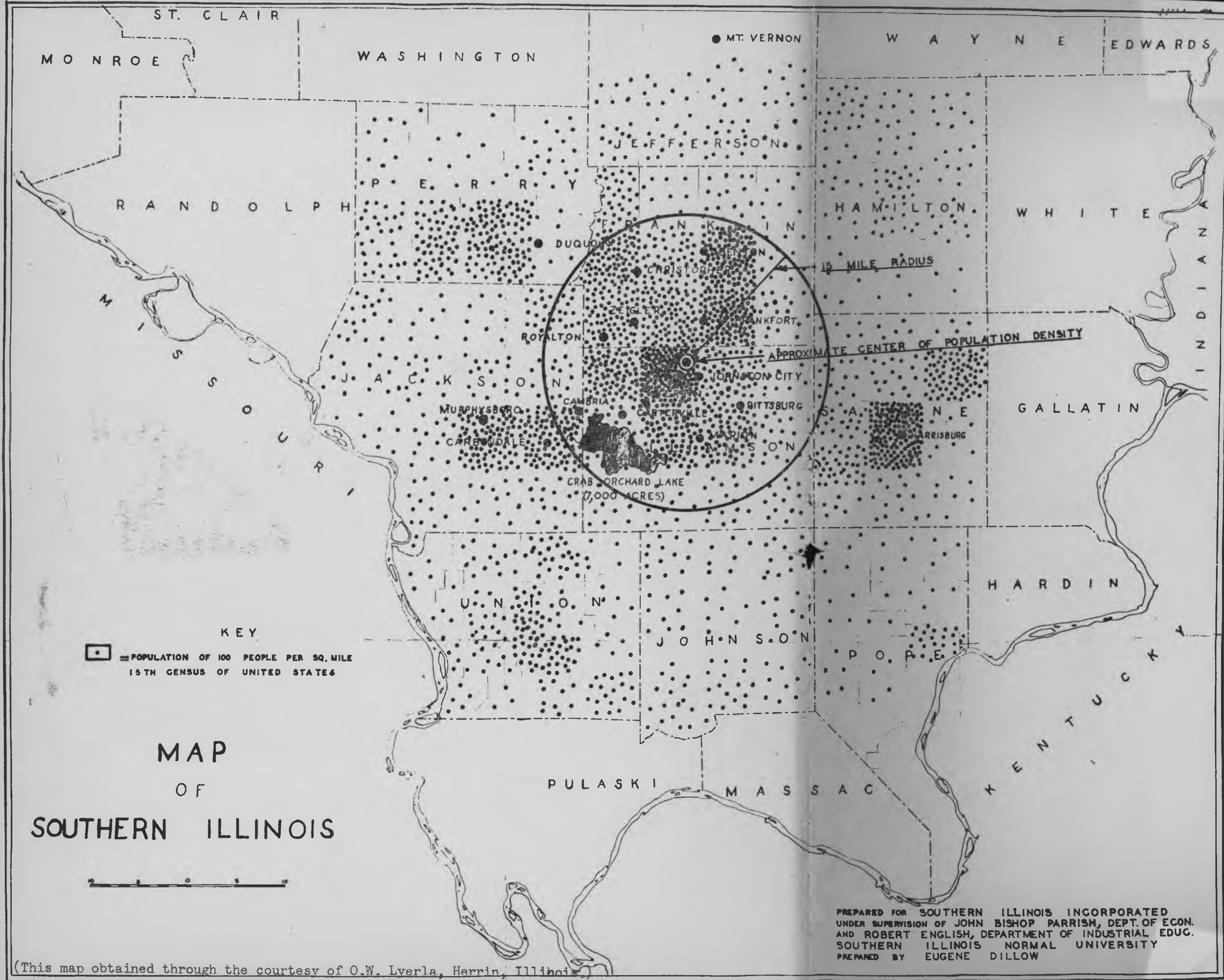

KEY

= POPULATION OF 100 PEOPLE PER SQ. MILE
15TH CENSUS OF UNITED STATES

MAP
OF
SOUTHERN ILLINOIS

PREPARED FOR SOUTHERN ILLINOIS INCORPORATED
UNDER SUPERVISION OF JOHN BISHOP PARRISH, DEPT. OF ECON.
AND ROBERT ENGLISH, DEPARTMENT OF INDUSTRIAL EDUC.
SOUTHERN ILLINOIS NORMAL UNIVERSITY
PREPARED BY EUGENE DILLOW

(This map obtained through the courtesy of O.W. Lverla, Herrin, Illinois.)

Key: ●=100 People, 15th Census of United States